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*Marked Human Bones from a Prehistoric  
Tarasco Indian Burial Place in the  
State of Michoacan, Mexico.*

By CARL LUMHOLTZ and ALEŠ HRDLÍČKA.

PLATES V-IX.

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**Article V.—MARKED HUMAN BONES FROM A PRE-HISTORIC TARASCO INDIAN BURIAL PLACE IN THE STATE OF MICHOACAN, MEXICO.**

By CARL LUMHOLTZ AND ALEŠ HRDLÍČKA.

PLATES V-IX.

I.

By CARL LUMHOLTZ.

In the latter part of October, 1896, during my last expedition (1894-97) into Mexico, where I was sent by the American Museum of Natural History of New York, I arrived at the pueblo of Zacápu, in the State of Michoacan. In the vicinity of this pueblo are many stone mounds, or *yácatas*, as they are called in that State. Most of these mounds are on or near the edge of an old flow of lava, which stretches from Zacápu in a northerly direction for many miles. On one occasion I followed for sixteen miles this edge of lava, which rises as high as five or six hundred feet, and found that stone mounds, and fortifications consisting simply of walls built of rough stone without plastering, were of frequent occurrence. Houses could also be seen, but on account of the roughness of the country they could only be sighted at a distance. They seemed to be made of stone, or rather small lava blocks, and plastered with mud. This kind of country extended for miles, and I have heard that such monuments of antiquity are to be found for a stretch of thirty or forty miles from Zacápu northward.

Directly above the village of Zacápu, on top of a ridge of this lava formation, stands a large stone fortress, called by the Mexicans 'El Palacio,' it being erroneously believed that King Calzontzín, of Tzintzúntzan, as they call him, had here one of his temporary country residences. One of the fabulous stories about him is, that food was carried to him directly from Tzintzúntzan—



nearly forty miles off—by runners. Every monument of antiquity in that part of the country is attributed to Calzontzín, as is every one in the country north of Michoacan to Montezuma.

The fortress is easy of access, and presents a level tract on the top, partly covered with bushes. It might have accommodated five or six hundred people. Only on one side of the fortress, the eastern and lowest, are there traces of walls on the edge. In the vicinity of this fortress are a great number of *yácatas*, generally rectangular in form.

Zacápu itself used to be one of the more important pueblos of the Tarasco Indians. There is still a very large contingent of natives of pure breed in its population, which numbers perhaps three thousand, over half of which are Indians. The latter are here, however, all 'civilized,' and no longer speak their native tongue, but they retain some of their superstitious customs. The place, until lately, has been noted as the abode of many robbers.

Circumstances did not allow me to make any other excavations than those for skeletons. Through the kind services of the principal man of the place, I secured a guide thoroughly familiar with the surroundings, who might be able to tell me of some locality where *muertos* could be found. At the recommendation of this guide, a small level place about twenty-five yards square, situated amidst rocks and ridges of lava, just at the foot and to the northeast of 'El Palacio,' was selected for excavation. The same day I was able to put men at work, and we immediately unearthed several skeletons. For five days, with the help of many men, I continued excavations here with great success; and before my departure I had thoroughly exhausted the place, which yielded over a hundred skulls of at least two distinct types, possibly three. The majority of them were apparently pure Tarasco; but there were also eight skulls of another type, having a shape which is very strange and unique in Mexico. All these specimens have been examined by Dr. A. Hrdlička, my collaborator, and a description of them will appear in time. The skeletons were found huddled together without any order whatever, and lying two or three deep. The topmost ones were encountered at a depth of about three feet.

Remarkably few objects were found with these skeletons, the principal consisting of about a dozen small copper bells and a few beads.

One interesting object was a dish containing a human skull (Fig. 1). The dish is dark in color, and is made of rather inferior earthenware. It measures 23 cm. in diameter from edge to edge of the rim, and 9 cm. in height. The skull was found resting on ashes. In this dish was also a small head rather rudely carved in light volcanic rock (Figs. 2, 3). The features are distinct, however; but the head is flat at the back, being 10 cm. long, and 4.5 cm. thick. At the top of it is a hole, which suggests that it was once used as a pendant. According to Dr. N. Leon, of Mexico, this method of burial of a detached skull has not hitherto been found in the State of Michoacan, but cases are known from the State of Oaxaca. When ashes are found, it is generally the result of the burning of the bones and the food. Mixed with the ashes were a few fragments of other, apparently equally simple, earthenware vessels, every piece differing in color and thickness.

We were also lucky enough to meet with a burial-jar (Plate V) standing upright among the skeletons towards the eastern part of the cemetery, nearer to the edge than to the centre. This is a large jar of clay, oval in form, of graceful shape, with flaring, curved rim. It measures 74 cm. in depth, the diameter of the opening being 49.6 cm. The maximum circumference of the jar is 225 cm., and is found to be much nearer to the rim than to the base of the jar. The ware, which is comparatively thin, is of a very good quality, with a smooth surface, particularly on the inside. The average thickness of the rim is 12 mm., and its width is about 6 cm.; it is polished inside, and red in color. Below this rim the body of the jar is 8 mm. thick, increasing in thickness gradually and uniformly downwards. It has a convex cover, also of clay. This cover, the rim of which was broken when found, looks like an inverted bowl. It is of inferior material, and may not have been made for the purpose. With cover on, the jar measures 91 cm. in height. The jar contained only the charred remains of a skeleton.

Such burial-jars are not altogether rare in the Tarasco region, although it is only accidentally that one comes across them, and to look for one may often prove a laborious and fruitless task.





Fig. 1. Pottery Dish with Human Skull and Sculptured Stone.

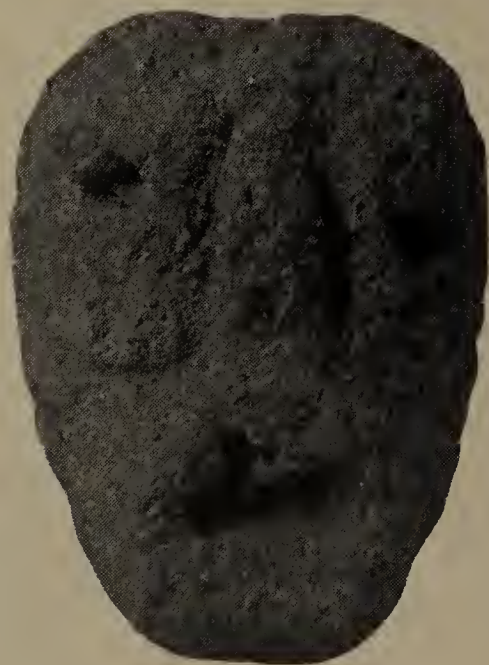


Fig. 2. Head cut from Volcanic Rock.  
Front view. (One-half natural size)



Fig. 3. Head cut from Volcanic Rock.  
Side view. (One-half natural size.)

I am informed by Dr. N. Leon that two kinds of Tarasco burial-jars are found in Michoacan,—large ones, 1.50 by 0.80 m., which contain the skeleton with clothing and utensils (this kind belongs to a very ancient epoch); and small ones, measuring 0.50 m. by 0.20 to 0.25 m., containing the body burnt or half burnt. The greater number is of the former class. He has not found either kind with covers in Zacápu. At present, jars resembling the large kind are manufactured in Comanja, near Zacápu. Burial-jars, according to the same informant, have never before been found associated with burials, as in this case.

The most curious objects discovered, however, while we were excavating near 'El Palacio,' were some marked human bones (Plates VI, VII, VIII, IX), which excited the interest of even the Mexicans working there. We unearthed, all together, 26 marked human bones dispersed among the skeletons. There were 11 femurs, 3 humeri, 11 tibiæ, and 1 fibula. Most of these were in an imperfect condition, 1 humerus and 3 tibiæ being the only perfect specimens in the lot. It was impossible to ascertain, with any degree of certainty, to which bodies they belonged, on account of the evident unsystematic, almost haphazard mode of burial, contrasting strangely with the apparent care shown in the markings on the bones. For a detailed description of these bones I refer the reader to the second part of this paper, prepared by my friend, Dr. A. Hrdlička.

Let us first consider the circumstances under which they were found. As has been said, there were possibly three types of people interred at this remarkable ancient burial-place, the majority of them being Tarasco. There is circumstantial as well as somatologic evidence that this was the case.

Mixed with them were the remains of a peculiar type of people. Their heads had been artificially flattened in a singular manner. I have seen a few specimens of this kind of skull at the residence of Dr. Perez at Uruapan, State of Michoacan, who thought, however, that the extraordinary flattening of the front, and the bulging out at the back and sides, were the natural growth of the skulls. This, however, cannot be the case, as they show undoubted marks of artificial deformation. The skulls in possession of Dr. Perez had been brought to him from some caves to the south-



west of the pueblo of Periban, and thus in the ancient territory of the Tarasco Indians.

The flatheads excavated at Zacápu, among which there are four females, differ from the Tarasco skulls in having a smaller cranial capacity, as well as in other respects of a more secondary character. They are, as Dr. Hrdlička thinks, akin to the Maya skulls, or to Quiché.

The skull found in the pottery dish is apparently Tarasco, but the skeleton found inside of the large burial-jar presents some features distinct from those of that tribe. It belongs to a tall individual, and all its components are large and massive. Dr. Hrdlička, though very doubtful of its being Tarasco, does not think it absolutely impossible that such may be the case. If it be Tarasco, then the physical types of people found would be reduced to only two.

Respecting the mode of burial, the greatest number of the bodies seem to have been carelessly interred, as if in a hurry; the deformed heads being found in the centre of the cemetery, and rather below the others. It is curious to note that the large Tarasco burial-jar should have been found here in such an unusual way. It is also remarkable that a detached skull should have been found in the clay dish,—the first time, so far as I know, that this has been met with among the Tarasco Indians. Lucian Biart mentions having found somewhat similar dishes elsewhere in Mexico (L. Biart, 'Aztecs,' p. 210, Chicago, 1877). It should also be observed how few objects were found at this burial-place, as if the people had been poor, or as if they had been slaves, or buried in great haste.

It would be difficult to make any positive assertions in regard to the mode of burial and its meaning. But as to the marked human bones, so prominent a feature of the burial-place, I will offer an explanation.

We may take it for granted that the markings on these bones are all of a post-mortem character. Further, any one familiar with Indian thought would, I think, naturally assert that they have a magical or shamanistic purpose. According to my experience with Indians, the idea of the trophy is not consistent with aboriginal American thought. Such things as these marked



bones, scalps of fallen enemies, etc., have a deeper significance to the Indian than that of mere trophies.

Nor should the fact that human bones are found with one end open, the marrow having been taken out, or the bones, maybe, even split, always be interpreted as indicative of cannibalism, particularly when only certain of the bones found in an ossuary are thus treated, and when some of them, as is sometimes the case, give evidence besides of death by disease.

There are two ways open for an explanation of the marking and cutting of these human bones. The first is, that it may have been an operation undertaken for the purpose of despatching the dead. Among the present tribes of Mexico known to me personally, there is a universal belief that the dead are troublesome to the survivors for at least one year ; and certain ceremonies and feasts in regard to them have to be observed in order to prevent them from doing harm, and to drive them away. The Tarahumares never neglect, when making beer, to put into the large jars in which the beer is kept a certain strong-smelling plant, called in Spanish *estafiata*, in order to keep the dead from spoiling the beer by urinating in it. The Cora Indians and others always take care, at their feasts for making rain, to have a special altar with food for the dead on it, since they would do harm if this were omitted. It is customary among most of the tribes in northern Mexico for a person, when drinking native brandy, to sacrifice a little to the dead, before drinking, by dipping the forefinger into it and throwing a few drops over his shoulder.

Another consideration here is the relation which, as the Indians hold, exists between disease and pain and the bones of the deceased person. Their ideas on this point can be no better expressed than in Cushing's 'A Case of Primitive Surgery' ('Science,' New York, Vol. V, No. 130) : "Such a sore [as the one described in the article], if malignant and deep, causes pain as of the bones. Its seed, then, must be deep-seated, or in the bones themselves : this seed must be removed, else it will grow and cause death." In a general way, the Indians classify diseases as of two kinds,—those seated in the bones, and those seated in the flesh. There were not many diseases among aboriginal tribes. The most prevalent complaint was probably rheumatism in one

form or another, as it is to-day among tribes which have not come much in contact with the whites. For this reason disease would, in most cases, be considered as located in the bones, particularly in those of the limbs.

As, however, the contents of the bones, or the marrow, is the principal part of them, the Indians believe that the pain of the disease is in the marrow, the 'brain' of the bones. When the Indians have pain in the head, they naturally think that it is in the brain; and when they have pain in the bones, as they call it, they naturally locate the pain in the inside of the bones, or in the marrow.

If a disease has been so obstinate as to yield in no wise to the shaman's efforts, and to cause death, the Indians think that the pain of the disease will continue after death, and vex the ghost, making him malignant and troublesome. Therefore the pain has to be conquered, and driven away from the bones and the marrow.

These considerations of aboriginal thought in regard to disease and death would lead one to believe that these bones were marked principally in order to sever all connection between the spirit and his former earthly surroundings, and from the disease which caused his death. At the same time, the operation would ease the minds of the survivors in relation to the harm that the dead one might do to them if such 'after-curing' were not performed.

The bones of dead bodies, in such case, might then have been cut off, scraped free of flesh, cleaned and 'cured,' and the marrow taken out of them and probably also 'cured' or 'killed' by burning,—a femur, or a tibia, or a humerus, etc., as the case might be,—and again buried with the dead.

Bodies of persons who have died from diseases in the 'flesh' most likely would not be treated in such a way, or it may be that such an operation gradually became conventionalized for all cases of very painful disease.

Against this interpretation, however, as applied to the present case, is the circumstance that three of the bones show unmistakable signs of having been handled repeatedly, and for a period of time, and bones thus treated would most likely have been buried when the body of the one to whom they belonged was interred.



Besides, it is not absolutely certain that the marked bones are those of Tarasco Indians, notwithstanding the fact that by far the greater number of those buried in the cemetery belong to that tribe. The deformed skulls, the burial-jar, and the detached skull would, in any case, also be matters of conjecture only.

Although the objections raised against this theory may in part be overcome, there is another explanation which seems to be even more plausible, namely, that the bones were taken from slain enemies for other uses than as mere trophies. This idea is borne out, according to a competent authority, by the finding of the detached skull before mentioned in a bed of ashes, because ashes clog the trails, and blind the power, of ghosts.

It is not necessary for our present purpose to discuss the many singular customs in regard to the disposition of the dead prevalent among other races of the globe. We remember how certain Australian people clean the flesh from the bones of their dead immediately after death, and how some of the bones (or even those of the whole body) are carried round for stated periods by the nearest of kin, etc. A discussion of primitive notions of the dead and of the causes of death, and of operations performed on the dead, would carry us too far.

The conception by primitive people of personal possessions being, so to speak, imbued with one principle or more of the spirit of their possessor, even after his death, is probably widespread, and is one of the reasons why so many races bury with the dead their personal possessions, or even destroy them.

In order that a sorcerer may do a man harm, it is generally deemed necessary that he shall possess some of his belongings, especially some part of his person, as, for instance, the hair. At least among the natives of this continent, so far as I know, such a sorcerer or an enemy might even injure the dead man's spirit by coming into possession of some of his personal property, and worry him or make him uncomfortable, or even deter him from doing harm.

Still more important is the power which is supposed to be latent in the bones of the dead.

I think we have a solution of the pending question in the admirable passage from Cushing's 'Zuñi Creation Myths,' p. 328,

where he speaks of the Zuñis killing the first two missionaries sent among them, taking their scalps, as was their custom, and cutting off the hand of one of them: "There the ceremonial of the scalp dances of initiation were performed over the scalps of the two friars, an observance designed both as a commemoration of victory and to lay the ghosts of the slain by completing the count of their unfinished days and making them members by adoption of the ghostly tribe of Zuñi." From this it may be inferred that the scalp or other portion of a slain enemy is not, I repeat, a trophy, but a *ghost-fetish*, an amulet by which the victor at once propitiates the shade of his victim, and ceaselessly wields power over him. The paint or the marks placed on the scalp are significant of this. They are designed to furnish the count of days, and to renew the life (in color of blood) of the slain enemy, who is now considered as adopted, as a ghostly slave, so to say, of the victor.

I am furthermore indebted to my friend Mr. Cushing for having in this connection drawn my attention to a practice, that existed among the Southern Indians of the United States, similar to that which I suppose to underlie the marking of the bones in question. See picture in Le Moyne's Drawings, reproduced by De Bry: 'Brevis Narratio,' II, Frankfort-on-the-Main, 1591. On p. xv is an illustration showing warriors in the act of cutting off limbs of fallen enemies.

From these statements I believe that the marked bones of this Tarasco burial-place were the bones of enemies, kept as amulets or fetishes, and buried with the dead warrior who procured them. Their possession meant to the conqueror the strength of the subdued man, as a sign of which he placed the transverse marks on them, symbolic, perhaps, of the count of the dead man's days. The extraction of the marrow would further help to make the fallen enemy a prisoner of the victor by eviscerating the bones and robbing the ghost of his last independent mortal power.

Judging from the importance which Indian tribes put upon their arms and legs, it is only natural that we should find the marked bones in this burial-place to be almost exclusively those of the limbs. An Indian who loses an arm or a leg might just as well die, in his own opinion, therefore he always takes special



care of those members. The Zuñi name for a sturdy, stalwart man, for example, is *óm-thla-na* ('big thigh'); and for a graceful, well-formed woman, *óm-kók-shi* ('good or fine thigh').

The haphazard mode of burial may be explained in the possible fact that the people had to retire before an enemy. There was no time for burying much of their personal property, but their fetishes would be sure to follow them.

Such bones would be considered a powerful 'medicine,' and the frequent occurrence of illustrations of human bones in the Codices, especially of the femur, might be explained in the light of the conclusions here reached. The Codex of the Borgia Museum is especially illustrative on this point. In the Codices, femurs are frequently pictured as tied to the head-dress of a priest; and sometimes a plume or a flower may be shown, stuck into a hole in the end of them; and a bone is often adorned with cross-bands of red and white. Compare also the cross-bones and the god of death with bones in conventionalized form, etc.

## II.

By ALEŠ HRDLIČKA.

The bones in question present on one side transverse markings running parallel to each other. They have generally been produced by filing, although the idea that in some cases they were also cut cannot be discarded. It is impossible to find any uniformity in the arrangement of these markings, which vary not only in character and in number, but also in depth and location.

Another peculiarity that at once presents itself to the eye is that in six cases the largest end of the bones has been perforated, so as to make a communication with the medullary canal. In several instances the shaft has been broken or the epiphysis cut off, no doubt also in order to reach the medullary canal. There is one case in which an ornamental design immediately adjoins the transverse lines; this design consists of transverse zigzag markings between two parallel lines. (See Plate VIII.)

The following is a detailed description of these bones :

A.—ENTIRE BONES.

[The fractional numbers refer to the Museum numbers of the specimens.]

I HUMERUS

( $\frac{30}{2115}$ ). Adult bone, left (Fig. 4). Flattened considerably from side to side, the edge pointing towards front. Olecranon fossa communicates, by means of a large opening, with the canal of the bone.



|  |          |
|--|----------|
| Length .....                               | 30.7 cm. |
| Circumference in middle <sup>1</sup> ..... | 6.7 "    |
| Diam. antero-post. " .....                 | 2.4 "    |
| Diam. lateral " .....                      | 1.53 "   |

Fig. 4. Section of Middle.

Markings occupy the middle two-fifths of the bone; they are 13 in number, and from one to two millimetres deep, irregularly arranged. No rubbing over the markings apparent on the bone.

3 TIBIÆ.

|                                 | $\frac{30}{2108}$ (LEFT).  | $\frac{30}{2127}$ (RIGHT).   | $\frac{30}{2129}$ (RIGHT).   |
|---------------------------------|--|--|--|
| Length .. . . . . .             | 32.9 (styloid want.)   | 35.5   | 36.0   |
| Circumf. at middle <sup>1</sup> | 6.3  | 7.9  | 9.3  |
| Diam. ant.-post.                |  |  |  |
| at middle.                      | 3.1  | 2.9  | 3.5  |
| " later. " "                    | 1.8  | 1.9  | 2.1  |
| Shape.....                      | Platycnæmic.   | Platycnæmic.   | Platycnæmic.   |
| Remarks .. . . . .              | Middle third of bone occupied by markings, which are 13 in number, regularly arranged at about 9 mm. one from the other, deep about 1.5 mm. No use of the bone apparent. | About the middle third; 23 markings, regular; separation, av'ge 5 mm.; depth ab't 2 mm.; bone somewhat smoother on the side of markings. | About middle fifth; 7 markings, irregular; separation, 11-21 mm.; depth ab't 1 mm.; no use apparent. |
| Situation of markings.          | Internal surface.  | Internal surface. Knee surface perforated, communicates with shaft.  | Internal surface.  |

<sup>1</sup> The exact middle of the bone is taken.



B.—IMPERFECT BONES.

2 HUMERI.

|                                    | $\frac{30}{2108}$   | $\frac{30}{2125}$   |
|------------------------------------|---|---|
| Circumference at about middle..... | 6.3   | 6.2 Only half (upper) bone present.   |
| Diameter ant. post.....            | 2.1   | 2.1   |
| “ lateral.....                     | 1.52  | 1.6   |
| Remarks.....                       | The shaft is quite angular.<br>Communication of shaft-cavity with olecran. fossa. Markings occupy about the 2d fourth of the post. ext. surface from above; ten in number, irregular; about 2 mm. deep.<br>Bone smooth <sup>1</sup> over two lower markings, no use apparent above. | Shaft more round than previous.<br>(?)<br>Begin between 1st and 2d third from above, on the post. surface; regular, No. ?; depth, about 2 mm.<br>No use of bone apparent. |

8 TIBIÆ.

|                                | $\frac{30}{2116}$   | $\frac{30}{2110}$   | $\frac{30}{2113}$                 | $\frac{30}{2124}$  | $\frac{30}{2120}$ | $\frac{30}{-30}$  |
|--------------------------------|---|---|-----------------------------------|--------------------|-------------------|-------------------|
| Circumf. at about middle ...   | 7.3   | 9.0   | 7.3                               | (?)                | 8.6               | (?)               |
| Diam. ant. post. ....          | 2.55  | 3.5   | 2.7                               | (?)                | 2.9               | (?)               |
| “ lateral .....                | 1.9   | 2.1   | 1.9                               | (?)                | 2.4               | (?)               |
| Marks begin.....               | Bet. upp. and mid. third.   | Bet. 1st and mid. third.  | Below upper third.                | Below upper fifth. | (?)               | At upper third.   |
| Marks occupy.....              | —   | —   | —                                 | —                  | —                 | —                 |
| Whole number.....              | (?)   | (?)   | (?)                               | (?)                | (?)               | (?)               |
| Number remaining.....          | 16  | 17  | 9                                 | 9                  | 17                | 14                |
| Regularity.....                | Some.   | Yes.  | Yes.                              | Yes.               | Yes.              | Yes.              |
| Average separation (in mm.)..  | —   | —   | 9                                 | 7                  | 6                 | 4                 |
| Least and greatest sep. (mm.). | 6-11  | 5-9.5   | —                                 | —                  | —                 | —                 |
| Depth (in mm.) about .....     | 2   | 2   | 2                                 | 1.5                | 1.5               | 1                 |
| Use apparent?.....             | Surface smoothed.   | Surface smoothed.   | —                                 | Surface smoothed.  | (?)               | —                 |
| Peculiarities of bones :       | Some, yes.  | Much, yes.  | Some.                             | (?)                | (?)               | (?)               |
| Platycnæmic?.....              | Knee art. surface perforated and communicates with hollow of shaft. | Knee epiphysis appears to have been removed, lower ant. surface in contact. | Ext. surface <i>en pilastre</i> . |                    |                   |                   |
| Site of markings.....          | Interior surface.   | Interior surface.   | Interior surface.                 | Interior surface.  | Interior surface. | Interior surface. |

<sup>1</sup> The smoothing of the surfaces, wherever it occurs, is but slight, and usually attended with smooth aspect of the other surfaces of the bone.

## 11 FEMURS.

|                                    | $\frac{30}{2121}$<br>(RIGHT).     | $\frac{30}{2123}$<br>(LEFT).                              | $\frac{30}{2109}$<br>(LEFT).                  | $\frac{30}{2107}$<br>(LEFT).       | $\frac{30}{2128}$<br>(LEFT).   | $\frac{30}{2119}$  | $\frac{30}{2112}$ | $\frac{30}{2122}$   | $\frac{30}{2114}$                     | $\frac{30}{2117}$  | $\frac{30}{2111}$ |
|------------------------------------|-----------------------------------|---|---|------------------------------------|--|--|-------------------|---|---------------------------------------|--|-------------------|
| Circumf. at about middle . . . . . | 8.3                               | 8.7   | 9.0   | 7.7                                | 8.8  | 8.8  | 8.4               | 8.0   | 8.2                                   | (?)  | 7.5               |
| Diam. ant. post. . . . .           | 2.95                              | 2.8   | 2.95  | 2.6                                | 3.0  | 2.9  | 2.9               | 2.9   | 2.75                                  | (?)  | 2.4               |
| " lat. . . . .                     | 2.3                               | 2.3   | 2.7   | 2.05                               | 2.65   | 2.5  | 2.45              | 2.0   | 2.4                                   | (?)  | 3.25              |
| Angle of neck . . . . .            | 126°                              | 125°  | 123°  | 128°                               | (?)  | (?)  | (?)               | (?)   | (?)                                   | (?)  | (?)               |
| Marks begin . . . . .              | 2d upper third.                   | 2d upper third.   | 2d upper fourth.                              | 2d upper third.                    | —  | 2d lower fourth.   | —                 | —   | 2d lower third.                       | 2d upper fourth.   | (?)               |
| Marks occupy . . . . .             | (?)                               | (?)   | (?)   | (?)                                | Middle 3-fifths.   | (?)  | Middle third.     | 3d&4th low.   | (?)                                   | (?)  | (?)               |
| Whole number . . . . .             | (?)                               | (?)   | (?)   | 12                                 | 32   | (?)  | 36                | 26  | (?)                                   | (?)  | (?)               |
| Number remaining . . . . .         | 11                                | 20  | 21  | 12                                 | 32   | 15   | 36                | 26  | 12                                    | 14   | 11                |
| Regularity . . . . .               | No.                               | No.   | No.   | No.                                | Yes.   | Some.  | Yes.              | Some.   | No.                                   | Some.  | No.               |
| Average separation (mm.) . . . . . | —                                 | —   | —   | —                                  | —  | —  | 4.5               | —   | —                                     | —  | —                 |
| Least and greatest " . . . . .     | 7-13                              | 4-6.5   | 4-15  | 4-14                               | 3-12   | 4.5-12   | —                 | 2.5-7   | 6-13                                  | 3.5-9  | 5-12              |
| Depth (in mm.), about . . . . .    | 2.5                               | 0.5-2.5   | 1-2   | 2.5                                | 1.0  | 2.0  | 1.5               | 2.5   | 1.5-3.5                               | 1.5  | 1-3.5             |
| Use apparent? . . . . .            | All sides smooth.                 | (?)   | Surface smoothed, borders of markings obtuse. | —                                  | —  | Whole bone smooth, edges of cuts purposely bevelled.   | —                 | —   | Bones smooth, edges of cuts bevelled. | Bone smooth, and lips slightly rubbed off on marked surface. | —                 |
| Site of markings . . . . .         | Anterior surface.                 | Anterior surface.   | Anterior surface.                             | Anterior surface.                  | Anterior surface.  | Anterior surface.  | Anterior surface. | Anterior surface.   | Anterior surface.                     | Anterior surface.  | Anterior surface. |
| Peculiarities of bones . . . . .   | Shaft partly <i>en-pilastre</i> . | Some (4) marks are much deeper; not regular. Bone normal. | Bone strong.                                  | Shaft triangular, medium strength. | Perforation between condyles; marks arranged in 3's except last set (has 2). | Lower edge of markings apparently decorated by a little ornament (tents?); perforation of condyles | No epiphysis.     | Platy-cnaemic. Long diaphysis (32.8); no epiphyses; lower epiphysis removed artificially. | (?)                                   | (?)  | (?)               |



## I FRAGMENT OF FIBULA.

( $\frac{30}{2136}$ ). Fibula of a young subject, about the lower third; ten markings left; distances 3-10 mm.; depth about 1.5 mm. No use apparent.

In regard to the significance of the markings on the bones, there is nothing about the notches which would lead directly to any definite conclusion; nevertheless there are certain characters in common which may aid considerably in the solution of the mystery.

In the first place the markings are not accidental; they have been made artificially, after a certain basal design, or habit, and with care, at the expense, no doubt, of much patience; and all this implies that they had their serious purpose.

The markings were not made by one individual, nor by one and the same instrument; their execution and characters show great variety; it almost seems as if each bone had had its own worker—which facts signify that the phenomenon concerned directly many individuals, and that renders the markings an event of social nature.

The bones used were all human, and this fact indicates that whatever the object of the markings may have been, it bore a close relation to human beings themselves.

The longest bones of the body were chosen, and the thick bones of the lower extremity had a further preference; these facts would show that the size and hence the durability, and the length and hence the space available, were factors in the selection of the bones. The nice surfaces for marking, and the ease of handling, may have been two more of such factors. Outside of all these, there is no reason to believe that to any particular one of the human bones used was attributed any specific importance.

The numerous artificially made communications with the medullary canal of the bones, all made without any further signs of injury to the bone, indicate that such communications of the medullary canal with the outside had their importance. Attempts to cleanse the inside of the bones would account for such openings, and this would in turn signify that the bones selected for this particular use were still fresh (fallen enemies? dead relatives?). Can-

nibalism is never mentioned as having existed in Michoacan. The marrow may have been utilized for some special purpose.

The situation of the grooves on the bones gives no clew as to the meaning of these. In most cases the markings occupied the middle third of the bone, but in a few others the grooves extended considerably nearer to the epiphyses; and the only thing that may be inferred from the situation, and also from the arrangement of the markings, is that a certain amount of imitation entered as an element into their production.

The number of grooves on the different bones are entirely irregular, and range from seven to thirty-six, only two or three of the bones bearing the same number. This shows that numbers played no specific *rôle* in the production of the grooves. (The numbers are not divisible by any common numeral.)

The arrangement of the grooves is similar on most of the bones, as has been already remarked, but the interval between the grooves varies on the different bones; it varies occasionally even on the same bone; and the same is true of the depth of the markings.

An attempt at decoration appears in only a single case, and in this case the simplicity of what appears to be a decoration suggests that those marks might have served some much more practical, probably a hieroglyphic, purpose.

As to the identity of the bones, this cannot be authentically determined, on account of the fragmentary condition of the majority of the marked bones, and because we are in possession of but few other known bones of ancient Tarascan people. The thickness and size of most of the marked specimens would point out that they were masculine bones, yet some may have been feminine members. The question of identity of the bones being very important, I append here a few measurements for comparison:

## FEMURS.

|                         | Circumference at Middle. |             |             | Diameter (ant. post.) |             |             |
|-------------------------|--------------------------|-------------|-------------|-----------------------|-------------|-------------|
|                         | Aver.<br>mm.             | Max.<br>mm. | Min.<br>mm. | Aver.<br>mm.          | Max.<br>mm. | Min.<br>mm. |
| Tarascan (4)... . . . . | 84.5                     | 86          | 83          | 29.2                  | 33.0        | 27.0        |
| Marked (11 frag'ts)..   | 83.4                     | 88          | 75          | 27.9                  | 30.0        | 24.0        |



## FEMURS.—Continued.

|                        | Diameter (later.) at the Middle. |          |          | Angle of the Neck with the Shaft. |      |      |
|------------------------|----------------------------------|----------|----------|-----------------------------------|------|------|
|                        | Aver. mm.                        | Max. mm. | Min. mm. | Aver.                             | Max. | Min. |
| Tarascan (4) . . . . . | 23.8                             | 25.5     | 22       | 125.3°                            | 128° | 123° |
| Marked (11 frag'ts)..  | 23.4                             | 27.0     | 20       | 125.5°                            | 128° | 123° |

## TIBIÆ.

|                          | Circumf. at Middle. |          |          | Diameter ant. post at Middle. |          |          | Diameter (later) at the Middle. |          |          |
|--------------------------|---------------------|----------|----------|-------------------------------|----------|----------|---------------------------------|----------|----------|
|                          | Aver. mm.           | Max. mm. | Min. mm. | Aver. mm.                     | Max. mm. | Min. mm. | Aver. mm.                       | Max. mm. | Min. mm. |
| Tarasc. (1), smwh't def. | 95.0                | —        | —        | 33.5                          | —        | —        | 25.0                            | —        | —        |
| Marked (9).              | 81.9                | 98       | 63       | 30.4                          | 35.0     | 25.5     | 20.8                            | 24.5     | 18.0     |

The Tarascan bones, it will be noticed from the preceding, appear somewhat stronger; but the number is not large enough for definite conclusions.

Finally, we have to take notice of the fact that the marked bones were found promiscuously buried with the Tarascans, which may mean that each of the bones had its owner, with whom it was buried.

The above seem to be all the facts of importance we possess about the marked bones. No such custom of marking bones exists among the Tarasco people to-day. Are any inductions possible on the basis of such a knowledge?

In our endeavor to arrive at the proper explanation of the marked bones, naturally the first thing which it would be important to consider would be the nature of the burial-place where the notched bones were found. (Description in the first part of the paper.) In looking through the literature for a description of the funeral rites of the Tarasco, I find that Bancroft, in his 'Native Races of the Pacific States (II, pp. 619 *et seq.*), gives a good *résumé* of such descriptions from several old and reliable writers.<sup>1</sup>

<sup>1</sup> Gomara, Conq. Mex., fol. 310, 311, 312; Torquemada, Monarq. Ind., tome II, 524, *et seq.*; Beaumont, Crón. Michoacan, MS., pp. 55, *et seq.*; Brasseur de Bourbourg, Hist. Nat. Civ., III, pp. 82, *et seq.*; Payne, in Soc. Mex. Geog., Boletin, 2d a Época, I, pp. 717, *et seq.*

Mr. Bancroft says that in Michoacan the funeral rites were of a very exact character, especially when a high personage was concerned. When a king died and his body was ready for the burial rites, the new king proceeded to select those among the servitors who, according to the inviolable law of the country, were doomed to follow the dead prince. Seven of these were noble women, to whom various duties were assigned. Among the male victims, who seem to have been slaves for the most part, every trade and profession was represented, and also clowns, and some of the physicians who had failed to save the life of the monarch. At midnight the litter was carried on the shoulders of the chief men to the temple, followed by vassals, warriors and courtiers, and while the flames of the pyre shot up, and the funeral chants fell from the lips of the mourners, the victims were stupefied with drinks and clubbed; the bodies were thrown into holes behind the temple, by threes or fours, together with the ornaments and other belongings of the deceased. The ashes and valuables were gathered from the smoking pyre, and made into a figure, which was dressed in royal habiliments, with a mask for its face, a golden shield on its back, bows and arrows by its side; this was set upon a throne facing the east, the whole being placed in a large urn, which was deposited upon a bed of golden shields and silver articles in a grave with stone walls, lined with mats, about twelve feet square, and equally deep, situated at the foot of the temple. The urn was covered with a number of valuable mantles, and around it were placed various implements, food, drink, and boxes filled with feather-work and ornaments; the grave was finally bridged with varnished beams and boards, and covered with a coating of earth and clay.

“The obsequies of the people bore a general resemblance to the above, the ceremonies being regulated by the rank and means of the deceased. The graves were usually situated in the fields or on the slope of a hill.”

It seems to me this description throws some light on the question of the burial-place of El Palacio, Zacápu. The body in the urn may not have been that of a Tarasco king; it may have been simply that of a great statesman, shaman, or soldier. We have almost everything in this case to support the conception of this



having been a burial of some Tarasco noble—we have the haphazard buried bodies, a thing most uncommon otherwise with the Indians; the small number of women, most of whom were young adults; the nature of the burying-ground, and the urn. Of the large number of male bodies found in the grave, a certain number were presumably slaves. These were, almost beyond a doubt, the individuals with the flattened skulls. The significance of the large number of other people, apparently Tarasco themselves, is uncertain. They may represent the victims of more burials than one, or may include soldiers fallen in battle.

So much for the burial-place. Granted that we have learned its real nature, the information obtained as to the marked bones remains still only that of a collateral order.

On the basis of all the preceding facts the following theories are proffered :

The bones were trophies from fallen enemies, and the grooves signified the number slain by the owner of the bone. The mention of a similar custom with 'Chichimecs' by Herbert Spencer ('Sociologie,' 1896, II, 38), and Bancroft ('American Races,' I, 629) seems to support the theory.

Or the grooves may have served the *rôle* of simple records of age, of great feasts, or of other events. The recording on bones of various occurrences is not an uncommon phenomenon with the Indians, though, so far as I can find, only animal bones were used for such a purpose.

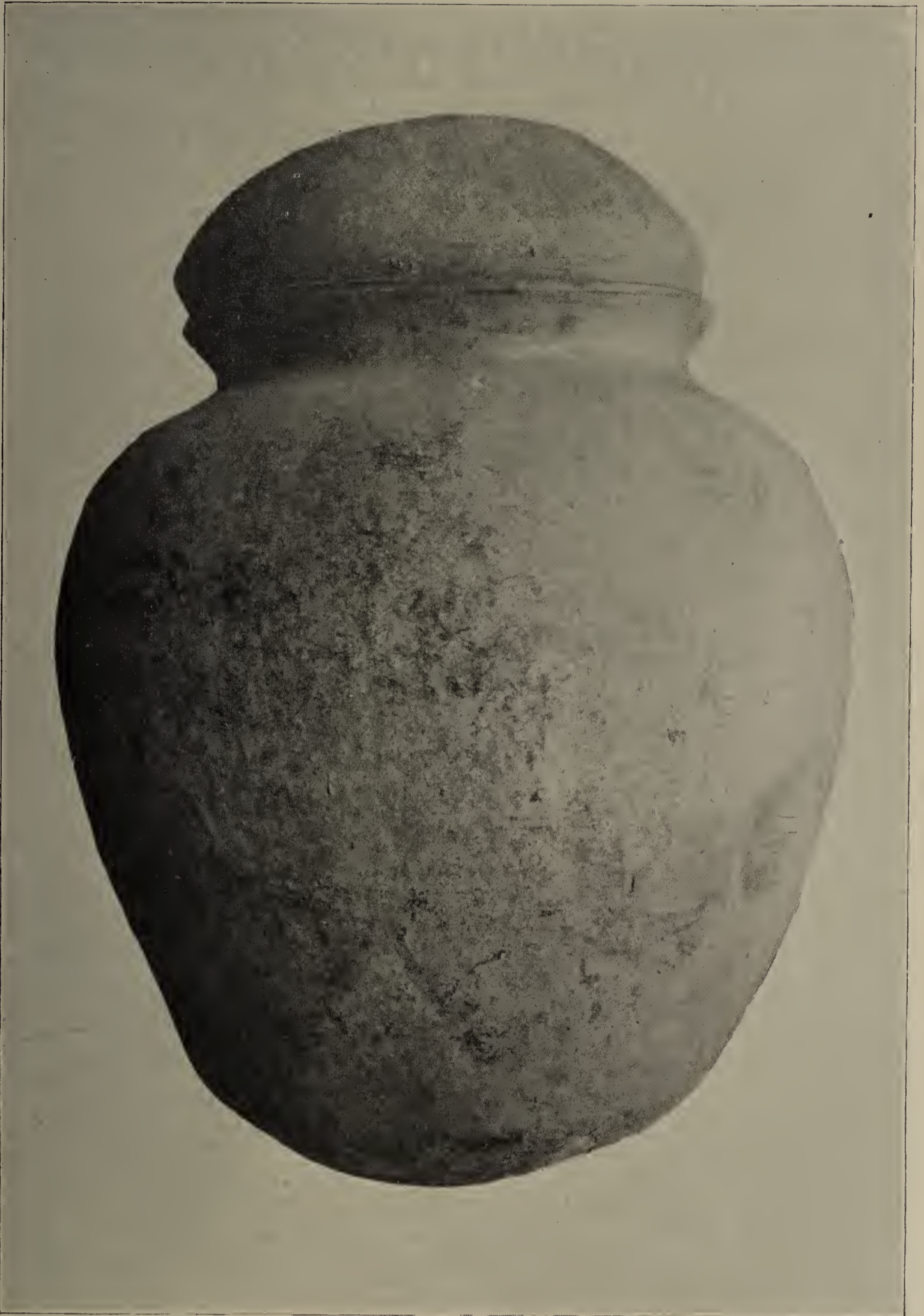
Or, finally, the bones may have served some as yet undetermined religious or ceremonial purpose.

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In conclusion, then, the authors present here, as a contribution to the ethnology of the ancient people of Mexico, the unique phenomenon of marking human bones. They also give their individual opinions in regard to the significance of that custom. In this, however, they agree: that there is one characteristic which prevails throughout the marking, namely, the similarity of execution of the grooves. This shows that the whole proceeding must have been conducted on a certain method, which again demonstrates that their significance was of a uniform character.







TARASCO BURIAL-JAR.





MARKED HUMERI AND FIBULA.







MARKED TIBIÆ.







VARIETIES OF MARKING.







ARTIFICIAL PERFORATIONS TO THE MEDULLA OF THE BONES.









